## Space Weather Forecast

Issued on Tuesday, 31 October 2023 at 01:04 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Slight chance of G1/Minor Storms on 31 Oct.**

**Analysis of Space Weather Activity over past 24 hours**
**Solar Activity:** Solar activity has remained Low, with only weak Common-class flares from a large and relatively complex region in the southern hemisphere. This is one of three regions on the disc, with two weaker and smaller regions in the northern hemisphere. No Earth-directed CMEs have been observed on available imagery.

**Solar Wind / Geomagnetic Activity:** Solar wind speeds has begun to steadily weaken, as the source of a fast solar wind begins to fade. Total magnetic field strength is weak, with the north-south component also varying weakly. Geomagnetic activity started Active, but has declined to Quiet to Unsettled levels.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**
**Solar Activity:** Low solar activity is expected, with a slight chance of Moderate activity, especially from AR3474.

**Solar Wind / Geomagnetic Activity:** No Earth directed CMEs are forecast. A current fast solar wind is forecast to steadily wane towards slightly elevated or background levels through the next four days as the source of the faster wind, rotates towards the western limb. No further fast solar winds are expected through the next four days. Unsettled to Active intervals are forecast on 31 Oct, with a very slight chance of G1/Minor Storms at the start of the period. Activity is the expected to decline towards Quiet levels by 03 Nov.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

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# Met Office Space Weather Forecast

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 5 | 1 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 20 | 20 | 25 | 30 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 2 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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